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EXAMINER
WOZNIAK, JAMES S

ART UNIT	PAPER NUMBER
2655	

DATE MAILED: 06/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/828,400	POULSEN ET AL.
	Examiner	Art Unit	
	James S. Wozniak	2655	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _15 February 2005_.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-20_ is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-20_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _2/24/2004_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All   b)☐ Some *   c)☐ None of:

       1.☐ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
     Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____ .

DETAILED ACTION

Response to Amendment

1.   In response to the office action from 11/17/2004, the applicant has submitted an

amendment, filed 2/15/2005, amending Claims 1, 12, and 20, while arguing to traverse the art

rejection based on the limitation regarding the limitations of Claims 1, 12, and 20 *(Amendment,*

Page 7). Applicant's arguments have been fully considered, however the previous rejection is

maintained due to the reasons listed below in the response to arguments.

Response to Arguments

2.   Applicant's arguments have been fully considered but they are not persuasive for the

following reasons:

       As per the applicants' arguments on pages 8-9 of the amendment pertaining to

independent Claims 1, 12, and 20, directed towards the connection between FFT and power, the

examiner argues that the FFT in Nakatoh is an example of transforming and that the power

calculation taught by Nakatoh is an example of transform products (and other transform products

listed in the recited column 11, Lines 29-35).

       In response to applicant's argument that the references fail to show certain features of

applicant's invention, it is noted that the features upon which applicant relies (i.e., the connection

between a spectral power parameter and a FFT) are not recited in the rejected claim(s).

Although the claims are interpreted in light of the specification, limitations from the specification

are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir.

1993).

As per the applicant's arguments regarding performing analysis in each frame *(Page 9)*,

the examiner notes that it is the combination of Nakatoh and Jankowski that teaches this

limitation. Jankowski teaches analyzing a particular speech segment *(Col. 3, Line 59- Col. 4,*

Line 24), while Nakatoh teaches a frame as a particular speech segment *(Col. 11, Lines 10-29)*.

The rejection of the dependent claims is traversed as further limiting a rejected

independent claim *(Page 9)*, and thus, these claims also remain rejected.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

4.   **Claims 1-4, 6, 8, 9, 12, 13, 15-17, and 20** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Nakatoh et al *(U.S. Patent: 5,611,019)* in view of Jankowski *(U.S. Patent:*

4,052,568).

With respect to **Claim 1**, Nakatoh discloses:

Accumulating samples of the composite signal to provide a series of frames each

containing a plurality of signal samples *(receiving input signal frames, Col. 11, Lines 10-29)*;

Transforming each frame to provide transform products in the frames *(parameters*

obtained from an FFT, Col. 11, Lines 30-45);

Analyzing each frame to determine a number of transform products having an amplitude

above a threshold *(threshold comparison, Col. 15, Lines 3-10)*;

For each frame comparing the number of transform products to a validation range to

determine if the frame contains the signal component *(counting a number of speech segments*

and comparing that number to a threshold for speech detection, Col. 15, Lines 11-23, and Fig.

4).

While Nakatoh discloses a method similar to the present invention, frames are counted to

determine to detect speech over a particular audio segment, however it would have been obvious

to one of ordinary skill in the art at the time of invention to perform a similar method using

individual speech samples to detect the presence of speech for a particular frame as is evidenced

by Jankowski. Jankowski discloses a method of voice activity detection that counts a specific

number of samples higher than a threshold to determine the presence of speech *(Col. 3, Line 59-*

Col. 4, Line 24).

Nakatoh and Jankowski are analogous art because they are from a similar field of

endeavor in the detection of speech in the presence of noise. Thus, it would have been obvious

to a person of ordinary skill in the art, at the time of invention, to modify the teachings of

Nakatoh with the means of detecting the presence of speech based on counting samples as taught

by Jankowski to implement a more adaptive voice activity detection method by counting samples

to detect the presence of noise for an audio segment (frame) to account for rapid changes in

signal level from since the initial threshold comparison is performed over a shorter segment.

With respect to **Claim 2**, Nakatoh recites:

Determining if the signal component is present in the composite signal based on the

contents of a series of the individual frames *(Col. 15, Lines 3-23)*.

With respect to **Claim 3**, Nakatoh discloses:

Detecting the presence of a predetermined characteristic in the composite signal before

the operation of determining the presence of the signal component can be performed *(power

above a predetermined threshold, Col. 15, Lines 3-23)*.

With respect to **Claim 4**, Nakatoh discloses:

Transforming each frame is performed by a Fast Fourier Transform *(Col. 11, Lines 30-

45)*.

With respect to **Claim 6**, Nakatoh recites:

Transforming each frame is performed by a windowed transforming *(Col. 11, Lines 46-

54)*.

With respect to **Claim 8**, Nakatoh teaching the frame counting method for determining

the presence of speech, as applied to claim 1, while Jankowski teaches counting until a

predetermined number (3) of speech frames is detected to indicate the presence of speech as

applied to claim 1.

With respect to **Claim 9**, Nakatoh shows:

The signal component is voice in a composite signal containing voice and non-voice

components *(Fig. 4, Elements 370 and 380)*.

Claim 12 contains subject matter similar to Claim 1, and thus, is rejected for the same

reasons.

With respect to **Claim 13**, Nakatoh recites:

A component to determine if the signal component is present in the composite signal based on the contents of the individual frames *(Col. 15, Lines 3-23)*.

Claim 15 contains subject matter similar to Claim 6, and thus, is rejected for the same reasons.

With respect to **Claim 16**, Nakatoh discloses:

Detecting the presence of a predetermined characteristic in the composite signal before operation of the frame validation component can be completed *(power above a predetermined threshold, Col. 15, Lines 3-23)*.

Claim 17 contains subject matter similar to Claim 9, and thus, is rejected for the same reasons.

With respect to **Claim 20**, Nakatoh in view of Jankowski teaches the VAD method as applied to Claim 1. Although neither Nakatoh nor Jankowski specifically suggests method storage as a computer program on a computer readable medium, it would have been obvious to one of ordinary skill in the art, at the time of invention, to do so in order to increase method compatibility and usability by providing a means for method use with multiple computer systems.

5.   **Claims 5 and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakatoh et al in view of Jankowski, and in further view of U.S. Patent: 6,263,312 to Kolesnik et al.

With respect to **Claims 5 and 14**, Nakatoh in view of Jankowski teaches the VAD

method utilizing windowing as applied to Claim 6. Nakatoh in view of Jankowski does not

specifically suggest frame overlapping, however Kolesniket discloses:

The method according to claims 1 and 12 respectively, including overlapping the frames

in conjunction with transforming each frame *(transforming samples using a windowing function*

(Fig. 1A, Element 3), also known as frame overlapping, Col. 5, Lines 1-5).

Nakatoh, Jankowski, and Kolesnik are analogous art because they are from a similar field

of endeavor in audio signal component detection. Thus, it would have been obvious to a person

of ordinary skill in the art, at the time of invention, to combine the overlapping of frames as

recited by Kolesnik with the windowing function as recited by Nakatoh since the method of

windowing and overlapping frames are noted by Kolesniket to be the same function.

6.   **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakatoh et al in

view of Jankowski, and further in view of Takada *(U.S. Patent: 5,907,624).*

With respect to **Claim 7**, Nakatoh in view of Jankowski teaches the VAD method as

applied to Claim 1. Nakatoh in view of Jankowski does not specifically suggest the comparison

of speech parameters to a spectral average, however Takada discloses such a method *(frequency*

domain, spectral power) derived from transform products to find if it is greater than a

predetermined threshold, Col. 5, Lines 57-64).

Nakatoh, Jankowski, and Takada are analogous art because they are from a similar field

of endeavor in signal component detection. Thus, it would have been obvious to a person of

ordinary skill in the art, at the time of invention, to modify the teachings of Nakatoh in view of

Jankowski with the comparison of speech parameters to a spectral average as taught by Takada

in order to provide a more accurate and adaptive voice activity detection by utilizing an average

for a threshold comparison, thus implementing a relative signal level comparison.

7.   **Claims 10, 11, 18, and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable

over Nakatoh et al in view of Jankowski, and further in view of LaMarche et al *(U.S. Patent:*

4,028,496).

With respect to **Claims 10 and 18**, Nakatoh in view of Jankowski teaches the VAD

method as applied to Claim 1. Nakatoh in view of Jankowski does not specifically suggest that a

composite signal contains voice and network tone components, however LaMarche discloses:

The signal component is voice in a composite signal containing voice and network tone

components *(Col. 4, Lines 35-50).*

Nakatoh, Jankowski, and LaMarche are analogous art because they are from a similar

field of endeavor in the detection of speech in the presence of noise. Thus, it would have been

obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings

of Nakatoh in view of Jankowski with the ability to detect tone signals in a composite signal

containing tone and voice data as taught by LaMarche in order to prevent confusion of common

telephony tone signals with a valid speech signal.

With respect to **Claims 11 and 19**, Nakatoh in view of Jankowski teaches the VAD

method as applied to Claim 3. Nakatoh in view of Jankowski does not specifically suggest an

additional means of echo detection, however Jankowski discloses such a means *(Col. 7, Line 63-*

Col. 8, Line 9).

Nakatoh, Jankowski, and LaMarche are analogous art because they are from a similar field of endeavor in the detection of speech in the presence of noise. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Nakatoh in view of Jankowski with the ability to detect echo signals in a composite signal as taught by LaMarche in order to prevent false speech detection in the presence of echoes.

Conclusion

8.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Nojiri et al (U.S. Patent: 4,530,110)- teaches a method for determining a low power

frame by comparing power vectors to a threshold.

Itoh et al *(U.S. Patent: 5,757,937)*- teaches the comparison of a power spectrum

calculated from a FFT to a threshold to determine the presence of speech.

Hattori et al *(U.S. Patent: 5,774,850)*- teaches a method for determining an amount of

frequencies exceeding a power threshold within a power spectrum.

10.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632

and email is James.Wozniak@uspto.gov. The examiner can normally be reached on Mondays-

Fridays, 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Wayne Young can be reached at (571) 272-7582. The fax/phone number for the

Technology Center 2600 where this application is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the technology center receptionist whose telephone number is (703) 306-

0377.

W. R. YOUNG
PRIMARY EXAMINER

James S. Wozniak
5/19/2005